Recovery in the Railway Equipment Manufacturing Industry

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FLUCTUATIONS in the volume of activity in the railway equipment industry have been wide during the post-war period. Unlike the situation in most other industries, the peak output was reached within a few years after the termination of the war. The value of product of the steam railway equipment manufacturing industry (exclusive of the volume of output of railroad repair shops) was halved between 1923 and 1927, and only a moderate increase was revealed by the 1929 census. With the onset of the depression and the decline in railroad traffic and revenues, the heavy fixed charges of the carriers became exceedingly burdensome and the volume of new equipment business fell precipitously until in 1932 and 1933 the amount of incoming orders was exceedingly small (see fig. 1). The

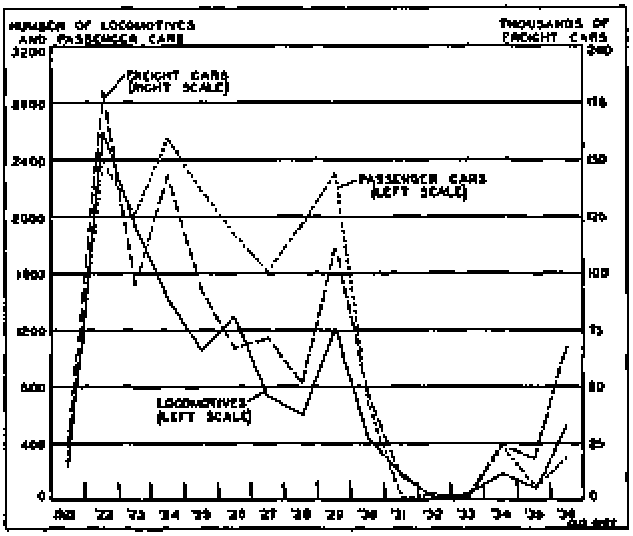

Figure 1.—New Orders for Equipment Placed by Domestic Purchasers (The Railway Age).

decline in equipment manufacturing operations between 1929 and 1933 was not quite so great, relatively, as the decline in new business because of the time element involved in producing units of such size. Nevertheless, the value of product of the industry in 1933, as reported by the Census of Manufactures, was only about one-eighth of the 1929 total.

During 1934 and 1935 there was some recovery in manufacturing operations, based largely on Federal aid extended in 1934. In 1936, however, and so far during 1937, the gradual improvement in financial results of railway operations has been reflected in a rapid rise in the volume of equipment business and in the extent of manufacturing operations. The current volume of unfilled orders held by equipment manufacturers compares favorably with the volume on hand in 1929.

Table 1.—Locomotive (Other Than Electric) and Car (Electric and Steam Railroad) Building Industries, Excluding Railroad Repair Shops

Year	Cars, electric and steam railroad: Wage earners (average for year)	Cars: Wages	Cars: Value of product	Locomotives (other than electric): Wage earners (average for year)	Locomotives: Wages	Locomotives: Value of product
		Thousands of dollars	Thousands of dollars		Thousands of dollars	Thousands of dollars
1921	48,023	70,945	340,536	15,883	20,478	102,023
1923	80,090	129,176	604,350	30,072	51,387	216,393
1925	50,393	77,247	390,771	12,800	18,219	66,380
1927	38,031	60,826	312,609	13,961	17,848	70,719
1929	40,015	63,287	328,220	11,046	17,994	83,858
1931	18,785	25,653	99,057	6,413	5,500	23,110
1933	14,260	14,710	40,148	2,274	1,803	6,037
1935 [1]	21,481	26,786	100,542	3,790	3,972	17,383

[1] Preliminary.

Source: Bureau of the Census.

Influence of Operating Results of Railroads.

While a variety of factors have contributed to the rapid rise in equipment purchasing during the past 2 years, it is evident that the predominant influence has been the ability of the carriers to finance necessary equipment purchases from operating revenues or from borrowings. It is apparent from figure 2 that subsequent to the immediate post-war period, when the railroads received a large amount of nonoperating

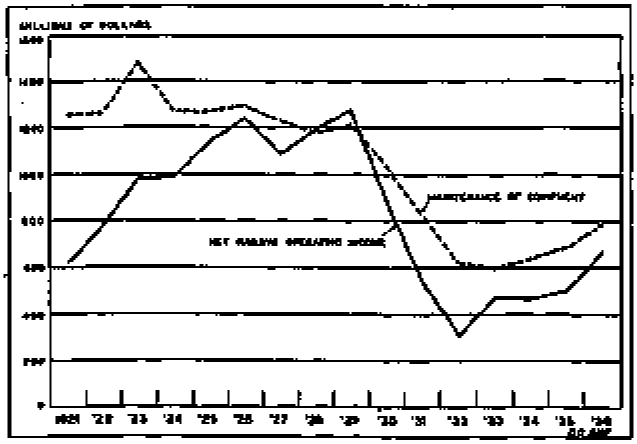

Figure 2.—Net Railway Operating Income and Maintenance of Equipment Expenses of Class I Steam Railways (Interstate Commerce Commission).

Note.—Includes switching and terminal companies 1921-31, but not subsequently. Since they represent less than 3 percent of the total during these years, the relationship shown is not impaired for the earlier period.

revenues which was an important factor in the rehabilitation of the properties after war-time operation, there has been a fairly close relationship between net operating income and expenditures for the maintenance of

equipment. Following the increase in operating income in 1933, the decline in expenditures for equipment maintenance came to an end, although as a result of the failure of operating income to increase to any appreciable extent in 1934 and 1935, the expansion in maintenance of equipment expenditures was slow. In 1936, when the rise in net railway operating income of $168,000,000 was accompanied by the realization of a profit of about the same size—the first profit of any size for the carriers as a group since 1931—expenditures for this purpose rose rapidly and they have continued to move higher so far in 1937.

Need for New Equipment.

Deferment of expenditures for new equipment during the depression created a considerable replacement demand which will have to be met if the carriers are to handle the increasing volume of traffic economically and expeditiously, although, as in other industries, the depression served to produce economies which represent permanent gains.

Table 2.—Number, Power, and Capacity of Locomotives and Freight Cars, Class I Steam Railways

End of year	Steam locomotives			Electric locomotive units (number)[2]	Freight cars		
	Number	Tractive effort[1]			Number	Capacity	
		Total (1,000 pounds)	Average (pounds)			Total (1,000 tons)	Average (tons)
1921	64,666	2,383,470	36,936	384	2,316,585	98,604	42.6
1922	64,140	2,401,452	37,441	372	2,283,380	98,847	43.1
1923	64,830	2,644,116	39,177	379	2,315,000	101,318	43.8
1924	63,000	2,503,178	38,801	392	2,348,722	104,140	44.3
1925	63,612	2,586,888	40,000	392	2,357,221	105,670	44.8
1926	63,342	2,611,228	41,880	419	2,348,043	104,063	45.1
1927	60,806	2,606,171	42,798	490	2,324,790	105,840	45.5
1928	58,846	2,578,643	43,838	595	2,297,540	106,322	45.9
1929	58,838	2,558,813	44,501	601	2,277,404	105,417	46.3
1930	55,876	2,538,940	45,726	616	2,276,793	104,190	46.0
1931	54,385	2,485,891	45,704	670	2,201,407	103,421	47.0
1932	52,402	2,430,326	46,200	725	2,144,041	100,001	47.0
1933	50,464	2,348,821	46,916	736	2,034,788	96,784	47.5
1934	47,430	2,263,267	47,712	749	1,985,277	92,900	48.0
1935	45,624	2,208,201	48,307	843	1,836,054	88,077	48.3
1936	44,103	2,162,765	48,979	817	1,768,192	85,721	48.8

[1] Not including power of boosters.
[2] The figure for the years prior to 1928 represent "number of locomotives."
Source: Interstate Commerce Commission.

Retirements of locomotives, freight cars, and passenger cars exceeded installations prior to the depression

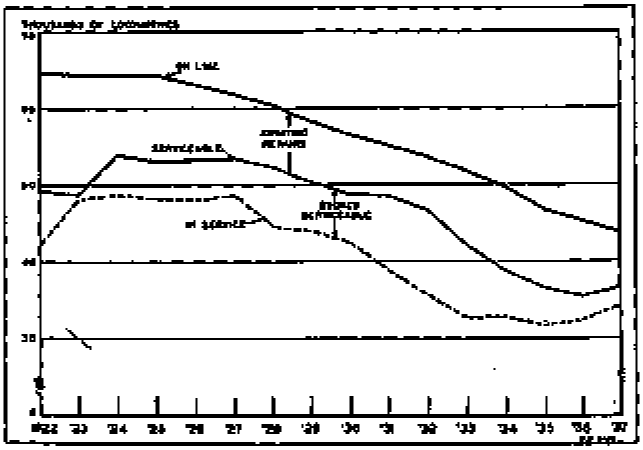

Figure 3.—Condition of Steam Locomotives, as of the first of the year. (Compiled from reports to Association of American Railroads.)

years, but the extent of the disparity was greatly increased subsequent to 1930, as may be seen from figure 4. The decline in the number of pieces of equipment has been partially offset by the greater power of modern locomotives and the larger capacity of the newer freight cars, but the total facilities of the railroads have nevertheless been reduced (table 2). From 1926 to 1936, despite an increase in tractive effort of the average locomotive, total available tractive power on the class

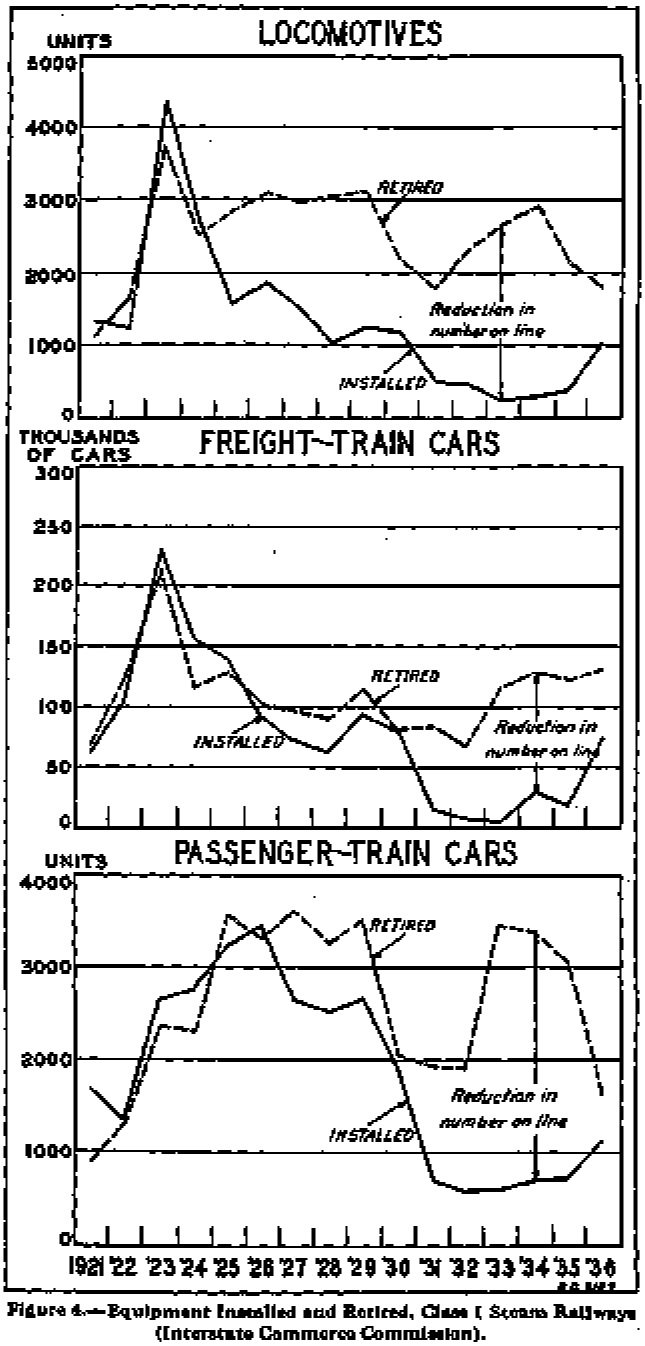

Figure 4.—Equipment Installed and Retired, Class I Steam Railways (Interstate Commerce Commission).

I railways fell 17 percent as the result of a 29 percent decline in the number of locomotives. During the same period, a 25 percent decline in the number of freight cars reduced the total capacity 19 percent, the difference being accounted for by the increase in the average capacity per car. The pressing into service of stored locomotives in 1935 and 1936, coupled with a net reduction in the number on the lines, materially

reduced the available reserve of locomotives, either serviceable or awaiting repairs (figure 3).

A factor of major significance with regard to the needs for equipment is the age of the units, since the question of comparative efficiency limits the extent to which cars now over 20 years of age can be rebuilt, while the opportunity of conversion to usefulness of cars over 25 years old is much less. As of January 1, 1937, over 20 percent of the cars on class I roads had passed 25 years of age, 23 percent were in the group from 21 to 25 years, and almost 12 percent of the present equipment will move into the latter group during the next 5 years.

Table 3.—Domestic Shipments of Railroad Locomotives

Year	Total	Steam	Electric	
		Number		Percent of total
1920	1,334	1,318	16	1.2
1921	832	830	2	.2
1922	1,060	1,056	4	.4
1923	3,023	2,993	30	.9
1924	1,330	1,313	17	1.3
1925	810	765	61	7.5
1926	1,397	1,332	45	3.2
1927	769	727	42	6.5
1928	412	367	45	10.9
1929	762	757	45	6.6
1930	785	700	87	11.0
1931	153	113	40	26.1
1932	90	32	58	64.4
1933	21	5	16	76.2
1934	110	61	49	44.5
1935	123	33	90	73.2
1936	101	78	23	22.8
January–May:				
1936	10	6	4	40.0
1937	143	128	15	10.5

Source: Bureau of the Census.

Electrification of additional trackage—notably in the eastern territory—resulted in a record total of electrical locomotive shipments in the year 1935. Throughout the depression the volume of electrical locomotive business was maintained at a much higher comparative level than was the business of steam locomotive manufacturers. In 1935 the ratio of electric to steam locomotive shipments was 3 to 1, reported shipments of steam locomotives in that year numbering only 33. The manufacture of electrical locomotives is not included in the manufacturing statistics given in table 1, because such activities are included by the Bureau of the Census in the electrical equipment manufacturing industry. From table 2, it will be seen that the number of electric locomotives on class I railroad lines has increased every year but one since 1924. The only post-war years in which the number in use decreased were 1924 and 1936.

Reduction in Surplus Freight Cars.

With the increase in traffic during recent years, the number of surplus freight cars has been reduced gradually from a depression peak of more than three-quarters of a million cars to a total of 147,207 at the end of May. The number of cars in bad order has also been reduced, and in the fall of 1936, when minor difficulties were reported with respect to the availability of certain types of cars, the class I roads had 241,573 cars undergoing or awaiting repairs. In the following months this number was reduced so that by May 1, 1937, the number awaiting or undergoing repairs was 188,489, although an excess of retirements over installations during this latter period brought a net increase in serviceable cars of only slightly more than 22,000, a gain of less than 2 percent.

Loadings of freight so far during 1937 have been almost 15 percent in excess of the comparable period of 1936, and should this rate of gain continue into the fall months the minor difficulties with respect to car supply reported last fall may again be encountered. Any substantial acceleration in the percentage of gain in volume of traffic might result in such difficulties becoming more pronounced, despite the volume of new equipment which has been placed in service in the past year and a half, and the amount of equipment now on order which will be available for handling business this fall.

New Orders in First Half of 1937 Up Sharply.

The extent of new business placed by railroad car operators (including both the railroads and private organizations, such as the refrigerator, petroleum, chemical companies, etc.) during the period from 1921 to 1936 is shown in figure 1. It may be noted that the number of freight cars ordered in 1936 was less than one-fifth below the 5-year average, 1925–29, but the number of passenger cars ordered was only about 15 percent and locomotive orders were only a little more than half of the 5-year average.

During the first half of 1937 there has been a further large increase in the number of pieces of equipment placed on order. The number of passenger cars ordered in the first 5 months of the year exceeded the total for the full year 1936. As reported by the Railway Age, orders for freight cars numbered 44,562, compared with the total for 1936 of 67,544; locomotive orders reported were 206, as against the 533 reported for the year 1936.

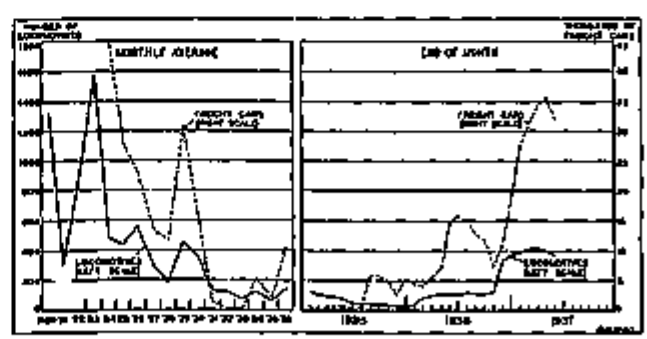

Figure 5.—Unfilled Orders of Equipment Manufacturers. (Data on locomotives are reported by the Bureau of the Census and cover all purchasers; data on freight cars are reported by the Association of American Railroads and cover orders of Class I Roads, exclusive of orders in railroad shops.)

Data on unfilled orders for freight cars presented in figure 5 are not complete, since only the unfilled orders of the equipment manufacturers which are destined for shipment to the class I railroads are included. Never-

theless, the graph portrays the wide fluctuations in the business and the extent to which the backlog of orders in the hands of equipment manufacturers has increased since 1935.

Unfilled orders for freight cars as defined above reached a new high in April, for the period subsequent to 1929, and the average level for the first 4 months of this year was higher than that for any corresponding period since 1926. Unfilled locomotive orders reported by manufacturers for March 1937 exceeded the total for any month since May 1930, but declined during the 2 months following as shipments exceeded new orders placed.

Employment and Pay-Roll Data Reflect Trend.

In view of the incomplete data on manufacturing operations and the fact that shipment data are not a satisfactory measure of output because of the relatively long period of production per unit, especially in the case of locomotives, the most satisfactory measure of the trend of actual operations is provided by the employment data compiled by the Bureau of Labor Statistics. It should perhaps be noted that there has been some expansion in the secondary products of the industry during the depression. In 1929, for example, the value of products not normally belonging to the industry, as reported by the Bureau of the Census, represented less than 4 percent of the total value of product as shown in table 1, whereas in 1935 it made up nearly 14 percent of the total.

The Bureau of Labor Statistics' monthly data reveal that employment and pay rolls for the companies included in the car-building group were cut in half between 1923 and 1929, and in 1933, the low year of the depression, employment averaged only about one-third of the 1929 average and pay rolls were less than one-fourth as large. Some improvement was recorded in 1934, with only a moderate shift in 1935. In the following year, there was a marked rise which was accelerated during the first half of 1937. In May the index of employment, which had dropped as low as 16.8 (1923–25=100) in 1933, stood at 78.9; the pay-roll index had advanced even more rapidly—from a low of 8.2 to 90.5.

In the steam locomotive manufacturing industry the fluctuations in employment and pay rolls have been even more pronounced. From a peak of 168 in 1923 the pay-roll index dropped irregularly to 52 in 1930 and then fell precipitously to a low of 6 in 1933. Employment followed a similar pattern, although it did not drop quite so low in 1933. By May 1937, employment had recovered to approximately the 1929 level, although the pay-roll totals still were lower than the average for that year.

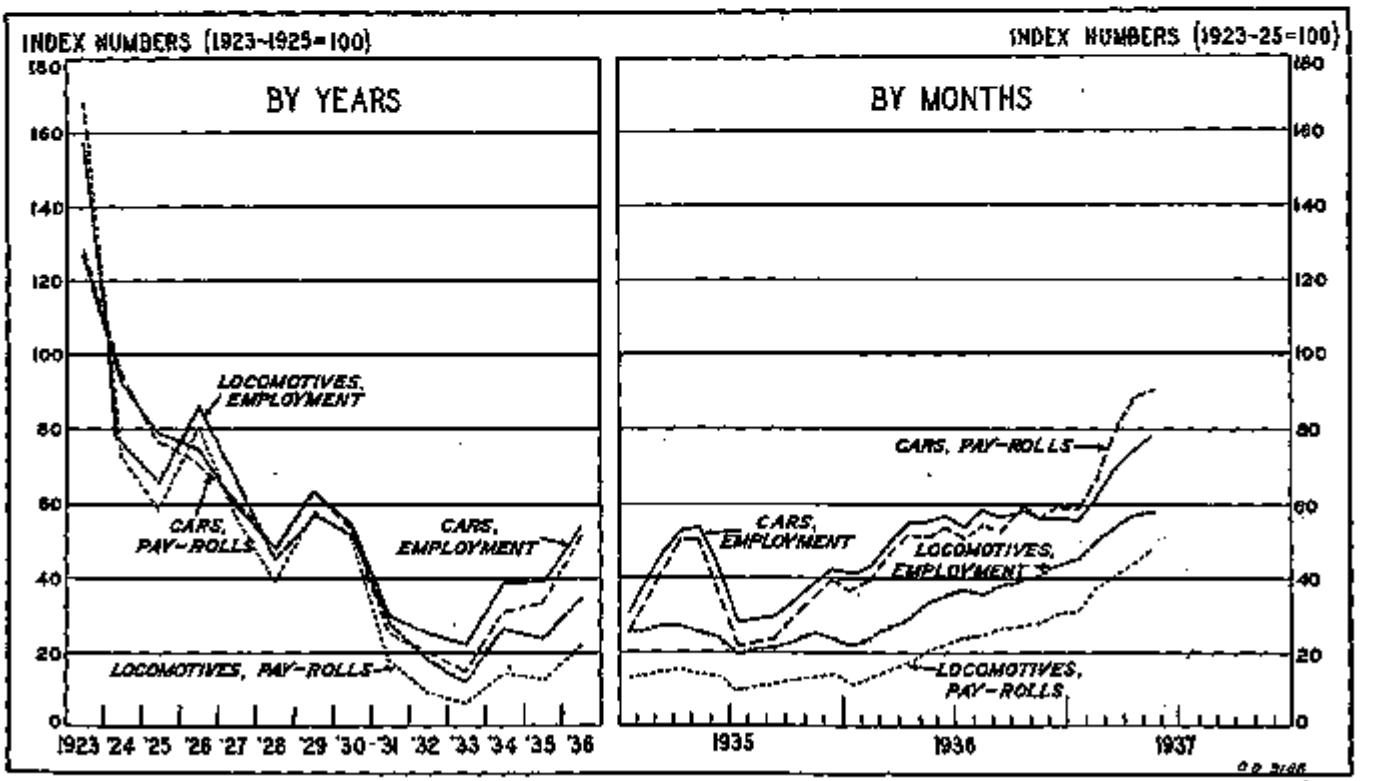

Figure 4.—Employment and Pay-roll Indexes, Car (electric and steam railroad) and Locomotive (other than electric) Building Industries, not including Railroad Repair Shops (United States Bureau of Labor Statistics).